NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

<INSERT FILE>

DATE: <DATE>
NPDES PERMIT NO. HI 0021296

FACT SHEET: APPLICATION FOR RENEWAL OF NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND ZONE OF MIXING (ZOM) TO DISCHARGE TO THE PACIFIC OCEAN, WATERS OF THE UNITED STATES

PERMITTEE: CITY AND COUNTY OF HONOLULU, DEPARTMENT OF ENVIRONMENTAL SERVICES

FACILITY: KAILUA REGIONAL WASTEWATER TREATMENT PLANT

FACILITY MAILING ADDRESS
City and County of Honolulu
Kailua Regional Wastewater Treatment Plant
95 Kaneohe Bay Drive
Kailua, Hawaii 96734

FACILITY STREET ADDRESS
City and County of Honolulu
Kailua Regional Wastewater Treatment Plant
95 Kaneohe Bay Drive
Kailua, Hawaii 96734

PERMITTEE MAILING ADDRESS
City and County of Honolulu
1000 Uluohia St., Suite 303
Kapolei, Hawaii 96707
Contact: ~~Mr. Timothy E Steinberger~~Lori M. K. Kahikina, Director – Dept. of Environmental Services
City and County of Honolulu
Telephone No. (808) 768-3486

Table of Contents

This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of the draft permit.

A. Permit Information

The following table summarizes administrative information related to the Kailua Regional Wastewater Treatment Plant (hereinafter, facility).

Table F-1. Facility Information

Permittee	City and County of Honolulu
Name of Facility	Kailua Regional Wastewater Treatment Plant
Facility Address	95 Kaneohe Bay Drive Kailua, Hawaii 96734
Facility Contact, Title, and Phone	~~Timothy E. Steinberger~~Lori M. K. Kahikina, Director, (808) 768-3486
Authorized Person to Sign and Submit Reports	~~Timothy E. Steinberger~~Lori M. K. Kahikina, Director, (808) 768-3486
Mailing Address	1000 Uluohia St, Suite 308 Kapolei, HI 96707
Billing Address	Same as above
Type of Facility	Wastewater Treatment Plant
Pretreatment Program	Yes
Reclamation Requirements	No
Facility Design Flow	15.25 million gallons per day (MGD)
Receiving Waters	Pacific Ocean: Marine
Receiving Water Type	Marine
Receiving Water Classification	Class A Dry Open Coastal Waters (HAR, Section 11-54-06(b)(2)(B))

1. NPDES Permit No. HI 0021296, including ZOM, became effective on September 2, 2006, and expired on June 30, 2009. The Permittee reapplied for an NPDES permit and ZOM on December 17, 2008. Additional information was submitted on December 3, 2012, December 4, 2012, December 13, 2012, and March 13, 2013. The Hawaii Department of Health (hereinafter DOH) administratively extended the NPDES permit, including the ZOM, on June 30, 2009, pending the reapplication process.

2. The Director of Health (hereinafter Director) proposes to issue a permit to discharge to the waters of the state until **<DATE>**, and has included in the proposed permit those terms and conditions which are necessary to carry out the provisions of the Federal Water Pollution Control Act (P.L. 92-500), Federal Clean Water Act (CWA) ~~of 1988~~ (P.L. 95-217) and Chapter 342D, Hawaii Revised Statutes.

B. Facility Setting

1. Facility Operation and Location

The Permittee owns and operates the facility, located in Kailua, Hawaii, on the island of Oahu. The facility has a design capacity of 15.25 MGD and provides primary and secondary treatment of wastewater for approximately 94,000 people in the Ahuimanu, Kaneohe, and Kailua communities. Influent water enters the Facility through two main lines, a force main from Kaneohe Pretreatment Facility and a gravity main from Kailua. Treatment consists of two mechanical bar screens, two grit chambers, four primary clarifiers, two biotowers, two aerated solids contact tanks, and three secondary clarifiers. A ultraviolet light disinfection system is located on-site, but not maintained online for treatment.

Treated effluent is discharged to the Pacific Ocean off of Mokapu Penninsula, through Outfall Serial No. 001 (Mokapu Outfall), at latitude 21° 27' 32" N and longitude 157° 42' 56" W. The Mokapu Outfall is a joint outfall which is also used by the Marine Corps Base Kaneohe Bay, Hawaii.

Comment [DC1]: Revised from previous permit based on verification from permittee and ZOM application.

Outfall Serial No. 001 is a 48-inch diameter, deep ocean outfall that discharges treated effluent through a diffuser that starts approximately 3,323 feet offshore and 105 feet below the surface of the water. The diffuser is approximately 963 feet long with 80 side ports that range in size from 4 inches to 5.5 inches in diameter and two end ports, one with a 4-inch diameter and one with a 5.5-inch diameter.

Sludge processing consists of two dissolved air floatation thickeners, four anaerobic digesters, and three centrifuges. Solids are disposed of at the Waimanalo Gulch Sanitary Landfill.

Storm water from the facility is regulated under the City and County of Honolulu's municipal separate storm sewer (MS4) permit, NPDES Permit No. HIS000002.

Comment [TW2]: Not sure what they do with their stormwater. Language is from Sand Island.

Figure 1 of the draft permit provides a map showing the location of the facility. Figure 2 of the draft permit provides a map of the Zone of Mixing (ZOM), Zone of Initial Dilution (ZID), and receiving water monitoring station locations.

2. Receiving Water Classification

The Pacific Ocean off of Mokapu Penninsula, is designated as "Class A Dry Open Coastal Waters" under Section 11-54-06(b)(2)(B), Hawaii Administrative Rules (HAR). Protected beneficial uses of Class A waters include recreation, aesthetic enjoyment, and the protection and propagation of fish, shellfish, and wildlife.

3. Ocean Discharge Criteria

The Director has considered the Ocean Discharge Criteria, established pursuant to Section 403(c) of the CWA for the discharge of pollutants into the territorial sea, the waters of the contiguous zone, or the oceans. The United States Environmental Protection Agency (EPA) has promulgated regulations for Ocean Discharge Criteria in 40 Code of Federal Regulations (CFR) Part 125, Subpart M. The Director has determined that the discharge will not cause unreasonable degradation to the marine environment. Based on current information, the Director proposes to issue a permit.

4. Impaired Water Bodies on CWA 303(d) List

CWA section 303(d) requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources.

On July 24, 2012, the EPA approved the 2008/2010 State of Hawaii Water Quality Monitoring and Assessment Report, which includes the 2008/2010 303(d) List of Impaired Water Bodies in the State of Hawaii.

The Pacific Ocean off of Mokapu Peninsula is not specifically listed in the 2008/2010 303(d) list. However, Fort Hase Beach, which is the closest listing to Outfall Serial No. 001, is listed on the 2008/2010 303(d) list but is not listed as impaired for anything and is reported as a Category 3 waterbody. At present, no TMDLs have been established for this waterbody. ~~Discharges regulated by the draft permit are not expected to contribute to the impairment of the receiving water.~~

Comment [TW3]: Verify if there are other listings closer to the outfall.

5. Summary of Existing Effluent Limitations

a. Existing Effluent Limitations and Monitoring Data

Effluent limitations contained in the existing permit for discharges from Outfall Serial No. 001 and representative monitoring data from January 2008 through June 2012, are presented in the following tables.

Table F-2. Historic Effluent Limitations and Monitoring Data – Outfall Serial No. 001

Parameter	Units	Effluent Limitation			Reported Data[1]		
		Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily
Flow	MGD	[2]	[2]	[2]	16	--	16
Biochemical Oxygen Demand (5-Day)	mg/L	30	45	[2]	21	25	--
	kg/day	1,442	2,163	[2]	1,103	1,937	--
	% Removal	As a monthly average, not less than 85 percent removal efficiency from influent stream.			88		
Total	mg/L	30	45	[2]	20	33	--

Parameter	Units	Effluent Limitation			Reported Data[1]		
		Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily
Suspended Solids	kg/day	1,442	2,163	[2]	1,191	2,554	--
	% Removal	As a monthly average, not less than 85 percent removal efficiency from influent stream.			89		
pH	standard units	Not less than 6 .0 nor greater than 9.0			6.4 – 7.4		
Enterococci	CFU/100 mL	[2]	[2]	[2]	--	--	130,000
Total Nitrogen	mg/L	[2]	[2]	[2]	--	--	20
Ammonia Nitrogen	mg/L	[2]	[2]	[2]	--	--	11
Nitrate + Nitrite Nitrogen	mg/L	[2]	[2]	[2]	--	--	15
Total Phosphorus	mg/L	[2]	[2]	[2]	--	--	3.9
Turbidity	N.T.U.	[2]	[2]	[2]	--	--	31
Chronic Toxicity – *Ceriodaphnia Dubia*	TUc	--	--	186	--	--	93
Chronic Toxicity – *Tripneustes Gratilla*	TUc	--	--	[3]	--	--	714

[1] Source: Monthly DMR's submitted by the Permittee from January 2008 through June 2012. Represents highest reported value over the monitoring period specified.
[2] No effluent limitations for this pollutant in the previous permit, only monitoring required.
[3] The chronic toxicity discharge limitation of 186 TUc listed in Part A.1 of the previous permit does not apply to monitoring results for toxicity tests using *Trypneustes gratilla*.

6. Compliance Summary

The following table lists effluent limitation violations as identified in the monthly, quarterly, and annual DMRs submitted by the Permittee from January 2008 to June 2012.

Table F-3. Summary of Compliance History

Monitoring Period	Violation Type	Pollutant	Reported Value	Permit Limitation	Units
01/01/08 - 01/31/08	Weekly Average	TSS	2,552	2,~~136~~163	kg/day
3/1/12 - 3/31/12	Weekly Average	TSS	2,554	2,~~136~~163	kg/day

7. Planned Changes

There are no planned changes expected during the term of the proposed permit.

Comment [DC4]: An inspection report indicates that they may be planning to build an equalization basin, but until this is underway I would avoid putting it into the factsheet.

C. Applicable Plans, Policies, and Regulations

1. Hawaii Administrative Rules, Chapter 11-54

On November 12, 1982, the Hawaii Administrative Rules, Title 11, Department of Health, Chapter 54 became effective (hereinafter HAR, Chapter 11-54). HAR, Chapter 11-54 was amended and compiled on October 6, 1984; April 14, 1988; January 18, 1990; October 29, 1992; April 17, 2000; October 2, 2004; June 15, 2009; and the most recent amendment was on October 21~~1~~, 2012. HAR, Chapter 11-54 establishes beneficial uses and classifications of state waters, the state antidegradation policy, zones of mixing standards, and water quality criteria that are applicable to the Pacific Ocean off of Mokapu Peninsula.

Comment [DC5]: Recent amendment?

Requirements of the draft permit implement HAR, Chapter 11-54.

2. Hawaii Administrative Rules, Chapter 11-55

On November 27, 1981 HAR, Title 11, Department of Health, Chapter 55 became effective (hereinafter HAR, Chapter 11-55). HAR Chapter 11-55 was amended and compiled on October 29, 1992; September 22, 1997; January 6, 2001; November 7, 2002; August 1, 2005; October 22, 2007; June 15, 2009; and the most recent amendment was on October 21~~1~~, 2012. HAR, Chapter 11-55 establishes standard permit conditions and requirements for NPDES permits issued in Hawaii.

Requirements of the draft permit implement HAR, Chapter 11-55.

3. State Toxics Control Program

NPDES Regulations at 40 CFR 122.44(d) require permits to include water quality-based effluent limitations (WQBELs) for pollutants, including toxicity, that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an exceedance of a water quality standard. The *State Toxics Control Program: Derivation of Water Quality-Based Discharge Toxicity Limits for Biomonitoring and Specific Pollutants* (hereinafter, STCP) was finalized in April, 1989, and provides guidance for the development of water quality-based toxicity control in NPDES permits by developing the procedures for translating water quality standards in HAR, Chapter 11-54 into enforceable NPDES permit limitations. The STCP identifies procedures for calculating permit limitations for specific toxic pollutants for the protection of aquatic life and human health.

Guidance contained in the STCP was used to determine effluent limitations in the draft permit.

D. Rationale for Effluent Limitations and Discharge Specifications

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. NPDES regulations establish two principal bases for effluent limitations. At 40 CFR 122.44(a), permits are required to include applicable technology-based limitations and standards; and at 40 CFR 122.44(d), permits are required to include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. When numeric water quality objectives have not been established, but a discharge has the reasonable potential to cause or contribute to an excursion above a narrative criterion, WQBELs may be established using one or more of three methods described at 40 CFR 122.44(d) – 1) WQBELs may be established using a calculated water quality criterion derived from a proposed state criterion or an explicit state policy or regulation interpreting its narrative criterion; 2) WQBELs may be established on a case-by-case basis using EPA criteria guidance published under CWA Section 304(a); or 3) WQBELs may be established using an indicator parameter for the pollutant of concern.

1. Technology-Based Effluent Limitations

a. Scope and Authority

Section 301(b) of the CWA and implementing EPA permit regulations at 40 CFR 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this permit must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR 133.

Regulations promulgated in 40 CFR 125.3(a)(1) require technology-based effluent limitations for municipal dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for publically owned treatment works (POTWs) [defined in section 304(d)(1)]. CWA Section 301(b)(1)(B) requires that such treatment works must, at a minimum, meet effluent limitations based on secondary treatment as defined by the EPA Administrator.

Based on this statutory requirement, EPA developed secondary treatment regulations, which are specified in 40 CFR 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the

minimum level of effluent quality attainable by secondary treatment in terms of 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

b. Applicable Technology-Based Effluent Limitations

At 40 CFR 133 in the Secondary Treatment Regulations, EPA has established the minimum required level of effluent quality attainable by secondary treatment shown in Table F-4 below. The standards in Table F-4 are applicable to the facility and therefore established in the draft permit as technology-based effluent limitations.

Table F-4. Applicable Technology-Based Effluent Limitations

Parameter	Units	30-Day Average	7-Day Average
BOD_5[1]	mg/L	30	45
TSS[1]	mg/L	30	45
pH	standard units	6.0 – 9.0	

[1] The 30-day average percent removal shall not be less than 85 percent.

2. Water Quality-Based Effluent Limitations (WQBELs)

a. Scope and Authority

NPDES Regulations at 40 CFR 122.44(d) require permits to include WQBELs for pollutants, including toxicity, that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard (reasonable potential). As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level that will cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard."

The process for determining reasonable potential and calculating WQBELs, when necessary, is intended to protect the receiving waters as specified in HAR, Chapter 11-54. When WQBELs are necessary to protect the receiving waters, the DOH has followed the requirements of HAR, Chapter 11-54, the STCP, and other applicable State and federal guidance policies to determine WQBELs in the draft permit.

Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established in accordance with the requirements of 40 CFR 122.44(d)(1)(vi), using (1) EPA criteria guidance under CWA Section 304(a), supplemented

where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information.

b. Applicable Water Quality Standards

The beneficial uses and water quality standards that apply to the receiving waters for this discharge are from HAR, Chapter 11-54.

(1) HAR, Chapter 11-54. HAR, Chapter 11-54 specifies numeric aquatic life standards for 72 toxic pollutants and human health standards for 60 toxic pollutants, as well as narrative standards for toxicity. Effluent limitations and provisions in the draft permit are based on available information to implement these standards.

(2) Water Quality Standards. The facility discharges to the Pacific Ocean, which is classified as a marine Class A Dry Open Coastal Waters in HAR, Chapter 11-54. As specified in HAR, Chapter 11-54, saltwater standards apply when the dissolved inorganic ion concentration is above 0.5 parts per thousand. As such, a reasonable potential analysis (RPA) was conducted using saltwater standards. Additionally, human health water quality standards were also used in the RPA to protect human health. Where both saltwater standards and human health standards are available for a particular pollutant, the more stringent of the two will be used in the RPA.

40 CFR 122.45(c) requires effluent limitations for metals to be expressed as total recoverable metal. Since water quality standards for metals are expressed in the dissolved form in HAR, Chapter 11-54, factors or translators must be used to convert metal concentrations from dissolved to total recoverable. Default EPA conversion factors were used to convert the applicable dissolved criteria to total recoverable.

(3) Receiving Water Hardness. HAR, Chapter 11-54 contains water quality criteria for six metals that vary as a function of hardness in freshwater. A lower hardness results in a lower freshwater water quality standard. The metals with hardness dependent standards include cadmium, copper, lead, nickel, silver, and zinc. Ambient hardness values are used to calculate freshwater water quality standards that are hardness dependent. Since saltwater standards are used for the RPA, the receiving water hardness was not taken into consideration when determining reasonable potential.

c. Determining the Need for WQBELs

NPDES regulations at 40 CFR 122.44(d) require effluent limitations to control all pollutants which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard. Assessing whether a pollutant has reasonable potential is the fundamental step in determining whether or not a WQBEL is required. Using the methods prescribed in EPA's *Technical Support Document for Water Quality-Based Toxics Control* (the TSD, EPA/505/2-90-001, 1991), the effluent data from Outfall Serial No. 001 were analyzed to determine if the discharge demonstrates reasonable potential. The RPA compared the effluent data with numeric and narrative water quality standards in HAR, Chapter 11-54-4. To determine reasonable potential for ~~parameters~~ nutrients contained in HAR, Chapter 11-54-6, a direct comparison of the ~~effluent's maximum effluent~~receiving water concentrations at the edge of the ZOM was compared to the most stringent WQS.

(1) Reasonable Potential Analysis (RPA). The RPA for pollutants with WQS specified in HAR, Chapter 11-54-4, based on the TSD, combines knowledge of effluent variability as estimated by a coefficient of variation with the uncertainty due to a limited number of data to project an estimated maximum receiving water concentration as a result of the effluent. The estimated receiving water concentration is calculated as the upper bound of the expected lognormal distribution of effluent concentrations at a high confidence level. The projected maximum receiving water concentration, after consideration of dilution, is then compared to the WQS in HAR, Chapter 11-54 to determine if the pollutant has reasonable potential. The projected maximum receiving water concentration has reasonable potential if it cannot be demonstrated with a high confidence level that the upper bound of the lognormal distribution of effluent concentrations is below the receiving water standards.

Because the most stringent WQS for pollutants specified in HAR, Chapter 11-54-6 are provided as geometric means and exceedances of these WQS are less sensitive to effluent variability, the RPA for pollutants in HAR, Chapter 11-54-6 was conducted by doing a direct comparison of the maximum effluent concentration to the most stringent applicable WQS after consideration of dilution, where applicable.

(2) Effluent Data. The RPA was based on effluent monitoring data submitted to the DOH in DMRs from January 2008 through June 2012.

(3) Dilution. The STCP discusses dilution, defined as the reduction in the concentration of a pollutant or discharge which results from mixing with the receiving waters, for submerged and high-rate outfalls. The STCP states that minimum dilution is used for establishing effluent limitations based on chronic criteria and human health standards for non-

carcinogens, and average conditions is used for establishing effluent limitations based on human health standards for carcinogens.

The previous permit included a dilution of 185:1 (seawater:effluent) for effluent limitations. The dilution used was based on the results of a 1985 Dilution Study (hereinafter Study) conducted by a contractor (Tetra Tech, Inc.) for an EPA's 301(h) application review, using EPA's mathematical model, PLUME. ~~The dilution used was based on a 1985 Dilution Study (hereinafter Study).~~ In the Study, the Permittee determined the critical minimum initial dilution to be 185:1. EPA's *Initial Mixing Characteristic of Municipal Ocean Discharges* indicates that "worst-case" conditions be evaluated using a combination of conservative values for conditions affecting initial dilution. Although no average dilution was provided, using a minimum critical initial dilution of 185:1 for calculating effluent limitations for human health standard for carcinogens is more conservative than an average dilution and will still be protective of water quality. Therefore, because only a critical minimum initial dilution was used in the previous permit and a new dilution study has not been conducted, the DOH has determined the critical short-term initial dilution of 185:1 is still protective of water quality for chronic and fish consumption criteria for non-carcinogens, and fish consumption criteria for carcinogens.

HAR chapter 11-54-9 allows the use of a ZOM to demonstrate compliance with WQS. ZOMs consider initial dilution, dispersion, and reactions from substances which may be considered to be pollutants. However, due to other potential sources of pollutants into the receiving water, such as storm water runoff or unidentified discharges, it is often problematic to determine the cause of WQS exceedances in the receiving water at the edge of a ZOM. It is more practical to determine the available dilution provided in the ZOM and apply that dilution to the WQS to calculate an effluent limitation that can be applied end-of-pipe. However, an available dilution at the edge of the ZOM is not currently known for this discharge. Thus, for Section 11-54-6(b)(3) parameters, reasonable potential to contribute to an exceedance of WQS is most reasonably assessed by comparing monitoring data at the edge of the ZOM to the applicable WQS. If an annual geometric mean at the edge of a ZOM exceeds the applicable WQS, the Permittee is determined to have reasonable potential for the pollutant. If an exceedance of WQS is not observed at the edge of the ZOM, it is assumed that sufficient dilution and assimilative capacity exists to meet WQS at the edge of the ZOM.

Where reasonable potential has been determined for Section 11-54-6(b)(3) pollutants, limitations must be established that are protective of water quality. Because the dilution at the edge of the ZOM is not known, where assimilative capacity exists this permit establishes limitations for Section 11-54-6(b)(3) pollutants as performance-based effluent limitations

and receiving water limitations and requires the Permittee to conduct a dilution analysis at the edge of the ZOM so that end-of-pipe effluent limitations may be established during future permitting efforts. Where assimilative capacity does not exist, it is not appropriate to grant a ZOM and/or dilution, and an end-of-pipe criteria-based effluent limitation must be established that is protective of WQS.

Assimilative capacity for pollutants with reasonable potential is evaluated for Section 11-54-6(b)(3) pollutants by aggregating all ZOM control station data annually and comparing the annual geometric means to the applicable WQS. If an annual geometric mean exceeds 90 percent of the WQS, assimilative capacity is determined to be insufficient and dilution may not be granted.

~~To ensure the Permittee is not causing or contributing to an exceedance of WQS, reasonable potential for nutrients is being determined based on a known dilution within the ZOM for each pollutant where there is assimilative capacity. As discussed in Part D.2.e of this Fact Sheet, ZOM monitoring data indicates that receiving water from control station M6 does not have assimilative capacity for ammonia. Thus, dilution was not granted for ammonia. ZOM monitoring data for nitrate plus nitrite, total nitrogen, and total phosphorus indicates that assimilative capacity for said pollutants exists in the receiving water. Thus, dilution for nitrate plus nitrate, nitrogen, and total phosphorus has been granted.~~

(4) Summary of RPA Results. The maximum effluent concentrations from the DMRs over the current permit term, maximum projected receiving water concentration after dilution calculated using methods from the TSD, the applicable HAR, Section 11-54-4(b)(3) and 11-54-6(b)(3) water quality standard, and result of the RPA for pollutants discharged from Outfall Serial No. 001 are presented in Table F-5, below. Only pollutants detected in the discharge are presented in Table F-5. All other pollutants were not detected and therefore, no reasonable potential exists.

Table F-5. Summary of RPA Results

Parameter	Units	Maximum Effluent Concentration	Maximum Projected Concentration	Applicable Water Quality Standard	RPA Results
Antimony, Total Recoverable	µg/L	1.25	0.032	15,000	No
Arsenic, Total Recoverable	µg/L	1.35	0.034	36	No
Beryllium, Total Recoverable	µg/L	0.066	0.0017	0.038	No
Chromium, Total Recoverable	µg/L	4.1	0.10	50[1]	No
Copper, Total Recoverable	µg/L	34	0.86	3.5	No
Cyanide, Total Recoverable	µg/L	1.8	0.046	1.0	No
Lead, Total Recoverable	µg/L	0.49	0.012	5.9	No
Mercury, Total Recoverable	µg/L	0.05	0.0013	0.025	No
Nickel, Total Recoverable	µg/L	6.7	0.17	8.4	No

Parameter	Units	Maximum Effluent Concentration	Maximum Projected Concentration	Applicable Water Quality Standard	RPA Results
Selenium, Total Recoverable	µg/L	1.5	0.038	71	No
Silver, Total Recoverable	µg/L	0.18	0.0046	2.7	No
Thallium, Total Recoverable	µg/L	0.05	0.0013	16	No
Zinc, Total Recoverable	µg/L	27	0.69	91	No
Chlordane	µg/L	0.042	0.0011	0.00016	Yes
Dieldrin	µg/L	0.03	0.00076	0.000025	Yes
1,4-Dichlorobenzene	µg/L	0.3	0.0076	660	No
Total Nitrogen	µg/L	93.5[2]20,300	NANA	11020,460[2]	NoNo
Ammonia Nitrogen	µg/L	3.4[2]10,800	NANA	2.0[3]2.0[3]	YesYes
Nitrate + Nitrite Nitrogen	µg/L	3.7[2]15,000	NANA	3.5651[2]	YesYes
Total Phosphorus	µg/L	8.7[2]3,890	NANA	1622,976[2]	NoYes

[1] Water quality standard is expressed as Chromium VI.
[2] Reflects available dilution (185:1)Maximum annual geometric mean at the edge of the ZOM.
[3] ZOM data for control stations MB1 and MB6 indicates that assimilative capacity does not exist and dilution is not provided.

Comment [DC6]: Turbidity WQO – 0.2
MEC is 31.1 NTU
RW shows exceedance at the control station (M6) at 0’ and 32’.

Should we establish a turbidity limitation with no dilution? No chance the Discharger can comply. They would be 100% out of compliance.

(5) Reasonable Potential Determination.

(a) Constituents with limited data. In some cases, reasonable potential cannot be determined because effluent data are limited. The draft permit requires the Permittee to continue to monitor for these constituents in the effluent using analytical methods that provide the lowest available detection limitations. When additional data become available, further RPAs will be conducted to determine whether to add numeric effluent limitations to this draft permit or to continue monitoring.

Data for the following parameters was not available:

- PCB
- Dioxin
- 1,2,4,5-Trichlorobenzene
- Aluminum
- Chlorine
- Chlorpyrifos
- Cyclohexane-technical
- Demeton
- Dichloro ehenol (2,4)
- Isoprophylchloroether
- Methyl(bis)chloroether
- Nitrosamines
- Nitroso-dibutylamine-N
- Nitroso-diethylamine-N
- Pentachloroethanes
- Pyrrolidine-N
- Tetrachloroethanes

(b) Pollutants with No Reasonable Potential. WQBELs are not included in this draft permit for constituents listed in HAR, Chapter 11-54-4(3) and 11-54-6(b)(3) that do not demonstrate reasonable potential; however, monitoring for such pollutants is still required in order to collect data for future RPAs. Pollutants with no reasonable potential

consist of those identified in Table F-5 or any pollutant not discussed in Parts D.2.c.(5).(a) or D.2.c.(5).(c) of this Fact Sheet.

(c) **Pollutants with Reasonable Potential.** The RPA indicated that ammonia, chlordane, dieldrin, ~~enterococcus,~~ nitrate plus nitrite, and pH~~, and total phosphorus~~ have reasonable potential to cause or contribute to an excursion above state water quality standards. Further, due to the nature of the discharge (secondary treated wastewater), pathogens such as enterococcus are present in the effluent. Concentrations up to 130,000 CFU/100 mL have been observed in the effluent, which exceed the applicable single sample maximum criteria of 501 CFU/100 mL and the geometric mean criteria of 35 CFU/100 mL with dilution (93,186 and 6,510 CFU/100 mL). As such, reasonable potential for enterococcus has also been determined.

Formatted: Indent: Left: 1.25", No bullets or numbering

~~(c)~~ During periods Thus, WQBELs have been established in this draft permit at Outfall Serial No. 001 for ammonia, chlordane, dieldrin, enterococcus, nitrate plus nitrite, and pH~~, and total phosphorus~~.

The WQBELs were calculated based on water quality standards contained in HAR, Chapter 11-54 and procedures contained in both STCP and HAR, Chapter 11-54, as discussed in Part D.2.d, below.

d. WQBEL Calculations

Specific pollutant limits may be calculated for both the protection of aquatic life and human health.

(1) WQBELs based on Aquatic Life Standards. The STCP categorizes a discharge from a facility into one of four categories: (1) marine discharges through submerged outfalls; (2) discharges without submerged outfalls; (3) discharges to streams; or (4) high-rate discharges. Once a discharge has been categorized, effluent limitations for pollutants with reasonable potential can be calculated, as described below.

(a) For marine discharges through submerged outfalls, the daily maximum effluent limitation shall be the product of the chronic water quality standard and the minimum dilution factor;

(b) For discharges without submerged outfalls, the daily maximum effluent limitation shall be the acute toxicity standard. More stringent limits based on the chronic standards may be developed using Best Professional Judgment (BPJ);

(c) For discharges to streams, the effluent limitation shall be the most stringent of the acute standard and the product of the chronic standard and dilution; and

(d) For high rate outfalls, the maximum limit for a particular pollutant is equal to the product of the acute standard and the acute dilution factor determined according to Section II.B.4 of the STCP. More stringent limits based on chronic standards may be developed using BPJ.

(2) WQBELs based on Human Health Standards. The STCP specifies that the fish consumption standards are based upon the bioaccumulation of toxics in aquatic organisms followed by consumption by humans. Limits based on the fish consumption standards should be applied as 30-day averages for non-carcinogens and annual averages for carcinogens.

The discharge from this facility is considered a marine discharge through a submerged outfall. Therefore, for pollutants with reasonable potential, the draft permit establishes, on a pollutant by pollutant basis, daily maximum effluent limitations based on saltwater chronic aquatic life standard after considering dilution and average monthly effluent limitations for non-carcinogens or annual average effluent limitations for carcinogens based on the human health standard after considering dilution. WQBELs established in the draft permit are discussed in detail below.

(3) Calculation of Pollutant-Specific WQBELs

As discussed in Part D.2.c.(3) of this Fact Sheet, a dilution of 185:1 has been established.

The following equations were used to calculate reasonable potential for the pollutants below.

Projected Maximum RWC = MEC x $99\%_{ratio}$ x Dm

Where:

RWC	=	Receiving water concentration
MEC	=	Maximum effluent concentration reported
$99\%_{ratio}$	=	The 99% ratio from Table 3-1 in the TSD or calculated using methods in Section 3.3.2 of the TSD.
Dm	=	Percent Dilution (i.e., 185:1, or 0.54%)

If the projected maximum receiving water concentration is greater than the applicable water quality standard from HAR, Chapter 11-54, the reasonable potential exists for the pollutant and effluent limitations are established. Pollutants with reasonable potential are discussed below in detail.

(a) Chlordane

i. **Chlordane Water Quality Standards.** The most stringent applicable water quality standard for chlordane is the human health standard of 0.00016 µg/L, as specified in HAR, Chapter 11-54.

ii. **RPA Results.** The Permittee reported four data points for chlordane (n = 4), resulting in a CV = 0.6. Based on a CV of 0.6 and four samples, the 99% multiplier calculated using methods described in section 3.3.2 of the TSD was 4.7. As discussed in Part D.2.c.(3), the facility is granted a dilution of 185:1. Therefore, Dm = 0.54%.

The maximum effluent concentration for chlordane was 0.042 µg/L.

Projected Maximum RWC = MEC x $99\%_{ratio}$ x Dm
= (0.042 µg/L) x 4.7 x 0.0054
= 0.0011 µg/L

HAR 11-54 Water Quality Standard = 0.00016 µg/L

The projected maximum receiving water concentration (0.0011 µg/L) exceeds the most stringent applicable water quality standard for this pollutant (0.00016 µg/L), demonstrating reasonable potential. Therefore, the draft permit establishes effluent limitations for chlordane.

iii. **Chlordane WQBELs.** WQBELs for chlordane are calculated using STCP procedures and are based on the chronic aquatic life water quality standard and human health standard. The draft permit establishes a daily maximum effluent limitation for chlordane of 0.74 µg/L based on the chronic aquatic life water quality standard and a dilution of 185:1, and an annual average effluent limitation of 0.030 µg/L based on the human health standard for carcinogens and a dilution of 185:1.

iv. **Feasibility.** The maximum effluent concentration reported for chlordane during the term of the previous permit was 0.042 µg/L. Since the maximum effluent concentration is less than the proposed maximum daily effluent limitation of ~~0.46~~0.74 µg/L, the DOH has determined that the facility will be able to comply with proposed maximum daily chlordane effluent limitations.

The maximum annual average concentration reported for chlordane during the term of the previous permit was 0.041 µg/L. Since the maximum annual average effluent concentration is greater than the proposed annual average effluent limitation of 0.030 µg/L, the DOH

has determined that the facility may not be able to immediately comply with proposed annual average effluent limitation.

v. **Anti-backsliding.** Anti-backsliding regulations are satisfied because the effluent limitations were not established in the previous permit for chlorodane, thus these limitations are ~~established in this permit are~~ at least as stringent as ~~t~~the ~~effluent limitations established in t~~he previous permit.

(b) Dieldrin

i. **Dieldrin Water Quality Standards.** The most stringent applicable water quality standard for dieldrin is the human health standard of 0.000025 µg/L, as specified in HAR, Chapter 11-54.

ii. **RPA Results.** The Permittee reported four data points for dieldrin (n = 4), resulting in a CV = 0.6. Based on a CV of 0.6 and four samples, the 99% multiplier calculated using methods described in section 3.3.2 of the TSD was 4.7. As discussed in Part D.2.c.(3), the facility is granted a dilution of 185:1. Therefore, Dm = 0.54%.

The maximum effluent concentration for dieldrin was 0.03 µg/L.

Projected Maximum RWC = MEC x $99\%_{ratio}$ x Dm
= (0.03 µg/L) x 4.7 x 0.0054
= 0.00076 µg/L

HAR 11-54 Water Quality Standard = 0.000025 µg/L

The projected maximum receiving water concentration (0.00076 µg/L) exceeds the most stringent applicable water quality standard for this pollutant (0.000025 µg/L), demonstrating reasonable potential. Therefore, the draft permit establishes effluent limitations for dieldrin.

iii. **Dieldrin WQBELs.** WQBELs for dieldrin were calculated using STCP procedures and are based on the chronic aquatic life water quality standard and human health standard. The draft permit establishes a daily maximum effluent limitation for dieldrin of 0.35 µg/L based on the chronic aquatic life water quality standard and a dilution of 185:1, and an annual average effluent limitation of 0.0047 µg/L based on the human health standard for carcinogens and a dilution of 185:1.

iv. **Feasibility.** The maximum effluent concentration reported for dieldrin during the term of the previous permit was 0.03 µg/L. Since the maximum effluent concentration is less than the proposed

maximum daily effluent limitation of 0.~~22~~ 35 µg/L, the DOH has determined that the facility will be able to comply with proposed maximum daily dieldrin effluent limitations.

The maximum annual average concentration reported for dieldrin during the term of the previous permit was 0.03 µg/L. Since the maximum annual average effluent concentration is greater than the proposed annual average effluent limitation of 0.0047 µg/L, the DOH has determined that the facility may not be able to immediately comply with proposed annual average effluent limitation.

v. **Anti-backsliding.** Anti-backsliding regulations are satisfied because the effluent limitations were not established in the previous permit for dieldrin, thus these limitations are at least as stringent as the previous permit.~~Anti-backsliding regulations are satisfied because the effluent limitations established in this permit are at least as stringent as the effluent limitations established in the previous permit.~~

e. Ammonia Nitrogen

HAR Chapter 11-54-6 establishes the following WQS for ammonia nitrogen:

Parameter	Geometric Mean	Value not to exceed more than 10% of the time	Value not to exceed more than 2% of the time
Ammonia Nitrogen (µg/L)	2.00	5.00	9.00

As demonstrated in Table F-5 of this Fact Sheet, reasonable potential to exceed applicable WQS for ammonia nitrogen has been determined.

Zone of mixing data from March 2008 through October 2012 indicate that assimilative capacity is not available for ammonia nitrogen in the receiving water. Assimilative capacity was evaluated as specified below:

(1) Review EPA's 303(d) list to determine if the water body is impaired for ammonia nitrogen.

The water body is not listed in EPA's 303(d) list for ammonia nitrogen.

(2) Identify nearby control stations to determine the "decision unit" for analysis.

Control Stations MB1 and MB6 are the available reference station and have been identified as the applicable control stations for evaluating assimilative capacity and constitutes the decision unit for the analysis.

(3) Data from all stations (including surface, middle, and bottom) are aggregated together to represent the decision unit and generate annual geomeans. To ensure adequate assimilative capacity, the highest annual geomean for the decision unit shall not exceed 90 percent of the applicable WQS.

The resulting geomeans were:

Year	Result (µg/L)
2008	1.7
2009	2.1
2010	1.2
2011	1.3
2012	1.2

The highest annual geomean for the decision unit of 2.1 µg/L is greater than 90 percent of the applicable WQS (1.8 µg/L). Assimilative capacity is not present in the receiving water.

(4) Consider other available information if available, including studies, reports, and receiving water data trends.

Additional information is not currently known that would further support assimilative capacity for total ammonia. However, assimilative capacity has not been granted for total ammonia based on receiving water data.

Because assimilative capacity is not available in the receiving water, dilution can not be granted for ammonia nitrogen, and the WQS must be applied without dilution. DOH has determined that the application of the geometric mean over a calendar year, and the 10^{th} percentile established as a single sample maximum, will be protective of water quality. Establishing a single sample maximum based on the 10^{th} percentile effectively prohibits the discharge of pollutants greater than the 10^{th} percentile value, and is protective of the 2 percentile WQS.

Routine monthly effluent monitoring for ammonia was performed over the previous permit term (January 2008 through June 2012). The highest annual geomean was 4,400 µg/L and the highest single sample maximum was 10,800 µg/L. Based on the effluent data available, it does not appear feasible for the Permittee to immediately comply with final end-of-pipe effluent limitations for ammonia nitrogen. An applicable treatment technology that will consistently achieve the proposed effluent limitations have not yet been identified by the Permittee, and will likely require significant and as yet

unknown modifications or lengthy studies. Compliance with the applicable effluent limitations will take substantial and costly facility alterations for which sufficient time will be necessary to raise funding, evaluate alternative treatments and facility upgrades, develop engineering plans, construct, and optimize treatment. Consistent with HAR 11-55-21, this permit establishes a compliance schedule for the Permittee to comply with final effluent limitations for ammonia nitrogen as soon as possible, but no longer than 9.75 years. During the compliance schedule, if it is determined that compliance with the final effluent limitations can be achieved earlier than 9.75 years from the effective date of this permit, the Permittee must comply with the final effluent limitations as soon as reasonably possible.

The proposed schedule of compliance is considered by the DOH to be in accordance with HAR, Section 11-55-21(b) and 40 CFR 122.47. HAR, Section 11-55-21(b) states, "When a schedule specifies compliance longer than one year after permit issuance, the schedule of compliance shall specify interim requirements and the dates for their achievement and in no event shall more than one year elapse between interim dates. If the time necessary for completion of interim requirement (such as the construction of a treatment facility) exceeds one year and is not readily divided into stages for completion, the schedule shall specify interim dates for the submission of reports of progress towards completion of the interim requirements."

During the compliance schedule, the Permittee is required to maintain current treatment capability. Interim effluent limitations for ammonia nitrogen have been established until the final effluent limitations become effective.

Interim effluent limitations have been developed based on observed effluent data over the recent permit-term. Thus, a single sample maximum interim effluent limitation for ammonia nitrogen of 10,800 µg/L has been established in this permit. The highest annual geomean for total ammonia is 4,400 µg/L (from 2009 through 2011), and has been established as an annual geomean interim effluent limitation.

Anti-backsliding regulations are satisfied because effluent limitations were not established in the previous permit for ammonia nitrogen, thus these limitations are at least as stringent as the previous permit.~~HAR Chapter 11-54-6 establishes the following WQS for ammonia nitrogen:~~

~~Parameter~~	~~Geometric Mean~~	~~Value not to exceed more than 10% of the time~~	~~Value not to exceed more than 2% of the time~~
~~Ammonia Nitrogen (µg/L)~~	~~2.00~~	~~5.00~~	~~9.00~~

~~As demonstrated in Table F-5 of this Fact Sheet, reasonable potential to exceed applicable WQS for ammonia nitrogen has been determined.~~

~~Receiving water data from January 2008 through October 2012 indicate multiple exceedances of ammonia nitrogen at the edge of the mixing zone. Further, data from control station M6 indicate that assimilative capacity does not exist for ammonia nitrogen within the receiving water, thus assimilative capacity does not exist and dilution should not be granted. The following exceedances of geometric mean WQS for ammonia nitrogen have been observed in control stations:~~

~~Date~~	~~Control Station~~	~~Depth~~	~~WQS~~	~~Reported Result~~
~~2008~~	~~M6~~	~~0'~~	~~2.0 µg/L~~	~~2.5 µg/L~~
~~2008~~	~~M6~~	~~16'~~	~~2.0 µg/L~~	~~2.2 µg/L~~
~~2009~~	~~M6~~	~~0'~~	~~2.0 µg/L~~	~~2.6 µg/L~~
~~2009~~	~~M6~~	~~16'~~	~~2.0 µg/L~~	~~3.0 µg/L~~
~~2009~~	~~M6~~	~~32'~~	~~2.0 µg/L~~	~~2.0 µg/L~~
~~2011~~	~~M6~~	~~0'~~	~~2.0 µg/L~~	~~3.1 µg/L~~
~~2011~~	~~M6~~	~~16'~~	~~2.0 µg/L~~	~~4.1 µg/L~~
~~2011~~	~~M6~~	~~32'~~	~~2.0 µg/L~~	~~2.3 µg/L~~
~~2012~~	~~M6~~	~~0'~~	~~2.0 µg/L~~	~~2.5 µg/L~~

~~Because assimilative capacity is not available in the receiving water, dilution cannot be granted for ammonia nitrogen, and the WQS must be applied directly. DOH determined that the application of the geometric mean over a calendar year, and the 10th percentile established as a single sample maximum, will be protective of water quality.~~

Formatted: Highlight

f. Nitrate plus Nitrite Nitrogen

HAR Chapter 11-54-6 establishes the following WQS for nitrate plus nitrite nitrogen:

Parameter	Geometric Mean	Value not to exceed more than 10% of the time	Value not to exceed more than 2% of the time
Nitrate Plus Nitrite (µg/L)	3.5	10.00	20.00

As demonstrated in Table F-5 of this Fact Sheet, reasonable potential to exceed applicable WQS for nitrate + nitrite has been determined.

Zone of mixing data from March 2008 through October 2012 indicate that assimilative capacity is available for nitrate + nitrite in the receiving water. Assimilative capacity was determined as specified below:

(1) Review EPA's 303(d) list to determine if the water body is impaired for nitrate + nitrite.

The water body is not listed in EPA's 303(d) list for nitrate + nitrite.

(2) Identify nearby control stations to determine the "decision unit" for analysis.

Control Stations MB1 and MB6 are the available reference station and have been identified as the applicable control stations for evaluating assimilative capacity and constitutes the decision unit for the analysis.

(3) Data from all stations (including surface, middle, and bottom) are aggregated together to represent the decision unit and generate annual geomeans. To ensure adequate assimilative capacity, the highest annual geomean for the decision unit shall not exceed 90 percent of the applicable WQS.

The resulting geomeans were:

Year	Result (µg/L)
2008	1.14
2009	0.89
2010	0.73
2011	0.64
2012	0.74

The highest annual geomean for the decision unit of 1.14 µg/L is less than 90 percent of the applicable WQS (3.15 µg/L). Assimilative capacity appears to be present in the receiving water.

(4) Consider other available information if available, including studies, reports, and receiving water data trends.

Information is not currently known that would result in the removal of assimilative capacity for nitrate + nitrite. An apparent trend of increasing concentration within the receiving water at the reference station does not appear present. The Permittee shall be required to conduct a ZOM dilution study to establish available dilution at the edge of the ZOM and verify that assimilative capacity within the receiving water exists for nitrate + nitrite.

Because the available dilution at the edge of the ZOM is not currently known, end-of-pipe water quality-based effluent limitations can not be determined. However, WQS exceedances at the edge of the ZOM occurred over the previous permit term, indicating that current effluent concentrations have the potential to exceed the available dilution for nitrate+nitrite. In the absence of a known dilution within the ZOM, and in addition to applicable receiving water limitations and requirements to evaluate available dilution at the edge of the ZOM, this permit establishes performance-based effluent limitations for nitrate+nitrite to minimize the potential for WQS exceedances within the receiving water.

Effluent concentrations for nitrate+nitrite from January 2008 through December 2012 indicate effluent concentrations as high as 15,000 µg/L. A performance-based single sample effluent limitation of 15,000 µg/L has been established based on the maximum effluent concentration observed over the previous permit term.

Anti-backsliding regulations are satisfied because the effluent limitations were not established in the previous permit for nitrate plus nitrite, thus these limitations are at least as stringent as the previous permit.

~~HAR Chapter 11-54-6 establishes the following WQS for nitrate plus nitrite:~~

~~Parameter~~	~~Geometric Mean~~	~~Value not to exceed more than 10% of the time~~	~~Value not to exceed more than 2% of the time~~
~~Nitrate plus nitrite (µg/L)~~	~~3.50~~	~~10.00~~	~~20.00~~

~~Receiving water data from January 2008 through October 2012 indicate multiple exceedances of nitrate plus nitrite at the edge of the mixing zone. However, monitoring data from control stations indicate that assimilative capacity does exist for nitrate plus nitrite within the receiving water, thus dilution should be granted.~~

~~The following WQS for nitrate plus nitrite are applicable to the facility after consideration of a dilution of 185:1:~~

~~Parameter~~	~~Geometric Mean~~	~~Value not to exceed more than 10% of the time~~	~~Value not to exceed more than 2% of the time~~
~~Nitrate plus nitrite (µg/L)~~	~~651~~	~~1,860~~	~~3,720~~

~~As demonstrated in Table F-5 of this Fact Sheet, reasonable potential to exceed applicable WQS for nitrate plus nitrite has been determined. DOH has determined that the application of the geometric mean over a calendar year will be protective of water quality. The final effluent limitation for nitrate plus nitrite is based on the water quality objective and a dilution of 185:1. Further, the 10th percentile WQS has been applied as an accelerated monitoring trigger to provide additional data to evaluate the impacts of wastewaters with high concentrations of nutrients on the receiving water.~~

~~g. Total Phosphorus~~

~~HAR Chapter 11-54-6 establishes the following WQS for total phosphorus:~~

~~Parameter~~	~~Geometric Mean~~	~~Value not to exceed more than 10% of the time~~	~~Value not to exceed more than 2% of the time~~
~~Total Phosphorus (µg/L)~~	~~16.00~~	~~30.00~~	~~45.00~~

~~Receiving water data from January 2008 through October 2012 indicate one exceedance of total phosphorus at the edge of the mixing zone. However, monitoring data from control stations indicate that assimilative capacity does exist for total phosphorus within the receiving water, thus dilution should be granted.~~

~~The following WQS for total phosphorus are applicable to the facility after consideration of a dilution of 185:1:~~

~~Parameter~~	~~Geometric Mean~~	~~Value not to exceed more than 10% of the time~~	~~Value not to exceed more than 2% of the time~~
~~Total Phosphorus (µg/L)~~	~~2,976~~	~~5,580~~	~~8,370~~

~~As demonstrated in Table F-5 of this Fact Sheet, reasonable potential to exceed applicable WQS for total phosphorus has been determined. DOH has determined that the application of the geometric mean over a calendar year will be protective of water quality. The final effluent limitation for nitrate plus nitrite is based on the water quality objective and a dilution of 185:1. Further, the 10th percentile WQS has been applied as an accelerated monitoring trigger to provide additional data to evaluate the impacts of wastewaters with high concentrations of nutrients on the receiving water.~~

h. pH

The Permittee was previously granted a ZOM for pH. The ~~draft permit establishes an effluent limitation for pH at Outfall Serial No. 001 of 7.0 – 8.6~~pH value at the edge observed at the edge of the ZOM ranged between 7.8 and 8.3 s.u. and is within ~~This pH effluent limitation is established in accordance with~~the water quality standards for open coastal waters in HAR, Section 11-54-6(b)(3). Thus, the technology-based effluent limitations of between 6.0 to 9.0 at all times appears to be protective of water quality outside the ZOM and has been carried over.~~These water quality based effluent limitations are more stringent than technology based effluent limitations contained in Part D.1 of this Fact Sheet. Thus, the more stringent water quality based pH effluent limitation is established in the draft permit.~~

Comment [TW7]: Out of 104 samples from January 2008 through 2012, 69 were reported below 7.0 The Discharger will not be able to comply with this effluent limitation.

i. Oil and Grease

HAR, Section 11-54-4(a)(2) establishes a narrative water quality objective that all waters shall be free of substances attributable to domestic, industrial, or other controllable sources of pollutants, including oil and grease. Oil and grease is a pollutant commonly found in the effluent from wastewater treatment plants serving municipalities. A monthly average effluent limitation of 15 mg/L has been established in this permit to ensure compliance with this narrative water quality objective.

Comment [DC9]: Mark had me remove the limits for O/G.

Anti-backsliding regulations are satisfied because the effluent limitations were not established in the previous permit for oil and grease, thus these limitations are at least as stringent as the previous permit.

j. Enterococcus

The discharge consists of treated sewage which may contain pathogens at elevated concentrations if not properly disinfected, sufficient to impact human health or the beneficial uses of the receiving water. To ensure the protection of human health, this permit establishes effluent limitations for enterococcus.

HAR, Section 11-54-8(b) establishes water quality objectives for marine recreational waters within 300 meters (1,000 feet) of shore. As discussed in Part E.3.a of this Fact Sheet, the draft permit establishes receiving water limitations for marine recreational waters within 300 meters (1,000 feet) from shore based on State regulations contained in HAR, Chapter 11-54. Federal regulations at 40 CFR 131.41(c)(2) establish water quality standards for bacteria in marine waters beyond 300 meters from shore, based on CWA Section 304(a). 40 CFR 122.44(d)(1)(vi)(B) states that where a State has not established a water quality criterion for a specific pollutant with reasonable potential, the permitting authority must establish effluent limitations on a case-by-case basis, using EPA's water quality criteria published under Section 304(a) of the CWA. Since Outfall Serial No. 001 is beyond 300 meters (1,000 feet) off shore, there is no applicable State water quality objective for the discharge, and EPAs criteria for enterococcus specified in 40 CFR 131.41 is applicable.

The applicable geometric mean is 35 CFU/100 mL. The applicable single sample maximum criteria for marine waters defined as infrequent use coastal recreation waters is 501 CFU/100 mL.

~~HAR, Section 11-54-8(b) establishes water quality objectives for marine recreational waters within 300 meters of shore. As discussed in Part E.3.a of this Fact Sheet, the draft permit establishes receiving water limitations for marine recreational waters within 300 meters from shore based on State~~

~~regulations contained in HAR, Chapter 11-54. Federal regulations at 40 CFR 131.41(c)(2) establish water quality standards for bacteria in marine waters based on CWA Section 304(a). 40 CFR 122.44(d)(1)(vi)(B) states that where a State has not established a water quality criterion for a specific pollutant with reasonable potential, the permitting authority must establish effluent limitations on a case-by-case basis, using EPA's water quality criteria published under Section 304(a) of the CWA. Since Outfall Serial No. 001 is beyond 300 meters of shore, there is no applicable State water quality objective for the discharge.~~

Receiving water data from March 2008 through October 2012 indicate that there were no exceedances of enterococcus at the edge of the mixing zone. Additionally, monitoring data from control stations indicate that assimilative capacity does exist for enteroccocus within the receiving water, thus dilution should be granted for enteroccocus.

The draft permit establishes the following end-of-pipe effluent limitations and monitoring requirements for enterococcus at Outfall Serial No. 001 based on 40 CFR 131.41(c)(2) and dilutions discussed below. Although the human contact with the receiving water may be infrequent, human contact within the zone of mixing may occur, thus for the protection of human health due to the potential for acute illness from pathogens, the minimum initial dilution of 185:1 was used to calculate applicable WQBELs for enterococcus.

Formatted: Not Highlight

(1) Due to the potential for human contact within the receiving water, ~~A~~a geometric mean of 6,510 CFU per 100 milliliters, based on the geometric mean of 35 CFU per 100 milliliters and a dilution of 185:1. Based on effluent data from January 2008 through June 2012, the minimum reported effluent enterococcus concentration was 6,600 CFU per 100 milliliters, indicating that the Permittee has the reasonable potential to cause or contribute to an exceedance of the water quality criteria for enterococcus. Thus, the monthly geometric mean of ~~10,290~~6,510 CFU per 100 milliliters has been applied as an effluent limitation in the proposed permit.

(2) Considering the applicable single sample maximum for coastal recreation waters of 501 CFU per 100 milliliters and a dilution of 185:1, the resulting WQBEL is 93,186 CFU per 100 milliliters. Based on effluent data from January 2008 through June 2012, the maximum reported effluent enterococcus concentration was 130,000 CFU per 100 milliliters, indicating that the Permittee has the reasonable potential to cause or contribute to an exceedance of the water quality criteria for enterococcus. Thus, the single sample maximum of 93,186 CFU per 100 milliliters has been applied as an effluent limitation in the proposed permit.

k. Whole Effluent Toxicity (WET)

WET limitations protect receiving water quality from the aggregated toxic effect of a mixture of pollutants in an effluent. WET tests measure the degree of response of exposed aquatic test organisms to an effluent or receiving water. The WET approach allows for protection of the narrative criterion specified in HAR, Chapter 11-54-4(b)(2) while implementing Hawaii's numeric WQS for toxicity. There are two types of WET tests – acute and chronic. An acute toxicity test is conducted over a short period of time and measures mortality. A chronic toxicity test is generally conducted over a longer period of time and may measure mortality, reproduction, or growth.

The previous permit established a chronic WET effluent limitation at Outfall Serial No. 001 for *Ceriodaphnia dubia* and additional monitoring for *Tripneustes gratilla.*

Whole effluent toxicity data for the time period between January 2008 and June 2012 using the test species *C. dubia* did not result in an exceedance of the chronic toxicity effluent limitation; however, monitoring results for *T. gratilla* indicates that the ~~Discharger~~Permittee has reasonable potential to exceed the effluent limitation for chronic toxicity of 186 TU_c established in the previous Permit for Outfall Serial No. 001, with effluent results as high as >714.3 TUc.

A chronic WET effluent limitation has been established at Outfall Serial No. 001. For improved WET analysis, DOH has begun implementing EPA's Test of Significant Toxicity Method (TST) for WET effluent limitations within the State. As such, the chronic WET effluent limitation at Outfall Serial No. 001 has been revised to be consistent with the TST method using *T. gratilla*. ~~As previously discussed, reasonable potential for WET has been determined for Outfall Serial No. 001 and an effluent limitation must be established in accordance with 40 CFR 122.44(d)(1). Further, a WET effluent limitation and monitoring are necessary to ensure compliance with applicable WQS in HAR, Chapter 11-54-4(b)(2).~~

T. gratilla is a native species to Hawaii, and as observed in historic effluent data, *T. gratilla* is more sensitive to potential toxic pollutants within the Permittee's effluent than *C. dubia*. The use of *T. gratilla* is representative of toxic impacts on local species.

Test procedures for measuring toxicity to marine organisms of the Pacific Ocean, including T.gratilla, are not provided at 40 CFR 136. Consistent with the Preamble to EPA's 2002 Final WET Rule, permit writers may include (under 40 CFR 122.41(j)(4) and 122.44(i)(iv)) requirements for the use of test procedures that are not approved at 40 CFR Part 136 on a permit-by-permit basis. The use of alternative methods for West coast facilities in Hawaii is further supported under 40 CFR 122.21(j)(5)(viii), which states, "West coast facilities in…,

Formatted: Space After: 0 pt

Hawaii,… are exempted from 40 CFR [P]art 136 chronic methods and must use alternative guidance as directed by the permitting authority."

EPA has issued applicable guidance for conducting chronic toxicity tests using T. gratilla in Hawaiian Collector Urchin, Tripneustes gratilla (Hawa'e) Fertilization Test Method 3/16/98 (Adapted by Amy Wagner, EPA Region 9 Laboratory, Richmond, CA from a method developed by George Morrison, EPA, ORD Narragansett, RI and Diane Nacci, Science Applications International Corporation, ORD Narragansett, RI) (EPA/600/R-12/022).

As previously discussed, reasonable potential for WET has been determined for Outfall Serial No. 001 and an effluent limitation must be established in accordance with 40 CFR 122.44(d)(1). Further, a WET effluent limitation and monitoring are necessary to ensure compliance with applicable WQS in HAR, Chapter 11-54-4(b)(2).

The proposed WET limitation and monitoring requirements are incorporated into the draft permit in accordance with the EPA national policy on water quality-based permit limitations for toxic pollutants issued on March 9, 1984 (49 FR 9016), HAR, Section 11-54-4(b)(2)(B), and EPA's National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document (EPA 833-R-10-003, 2010).

Consistent with HAR, Chapter 11-54-4(b)(2)(B), this Permit establishes a chronic toxicity effluent limitation based on the TST hypothesis testing approach. The TST approach was designed to statistically compare a test species response to the in-stream waste concentration (IWC) and a control.

For continuous discharges through submerged outfalls, HAR 11-54-4(b)(4)(A) requires the no observed effect concentration (NOEC), expressed as a percent of effluent concentration, to not be less than 100 divided by the minimum dilution. Thus, the minimum dilution of 185:1 is most appropriate for establishing a critical dilution factor. The following equation is used to calculate the IWC where dilution is granted (Outfall Serial No. 001):

IWC = 100/critical dilution factor

= 100/~~186~~185

= 0.54%

For any one chronic toxicity test, the chronic WET permit limit that must be met is rejection of the null hypothesis (Ho):

IWC (100 percent effluent) mean response ≤ 0.75 × Control mean response.

A test result that rejects this null hypothesis is reported as "Pass". A test

result that does not reject this null hypothesis is reported as "Fail"

The acute and chronic biological effect levels (b values of 20% and 25%, respectively) incorporated into the TST define EPA's unacceptable risks to aquatic organisms and substantially decrease the uncertainties associated with the results obtained from EPA's traditionally used statistical endpoints for WET. Furthermore, the TST reduces the need for multiple test concentrations which, in turn, reduces laboratory costs for dischargers while improving data interpretation. A significant improvement offered by the TST approach over traditional hypothesis testing is the inclusion of an acceptable false negative rate. While calculating a range of percent minimum significant differences (PMSDs) provides an indirect measure of power for the traditional hypothesis testing approach, setting appropriate levels for β and α using the TST approach establishes explicit test power and provides motivation to decrease within test variability which significantly reduces the risk of under reporting toxic events (USEPA 2010[1]).

Comment [TW10]: This is for the footnote below. But, is this reference correct? Or should it be "2002a"?

Taken together, these refinements simplify toxicity analyses, provide dischargers with the positive incentive to generate high quality data, and afford effective protection to aquatic life.

A WET effluent limitation based on the TST hypothesis testing approach is protective of the WQS for toxicity contained in HAR, Section 11-54-4(b)(4)(B) and is not considered to be less stringent. Use of the TST approach is consistent with the requirements of State and federal anti-backsliding regulations.

I. Summary of Final Effluent Limitations

In addition to the effluent limitations specified above, HAR, Section 11-55-20 requires that daily quantitative limitations by weight be established where possible. Thus, in addition to concentration based-effluent limitations, mass-based effluent limitations (in pounds per day) have been established where applicable based on the following formula:

lbs/day = 8.34 * concentration (mg/L) * flow (MGD)

40 CFR 122.45(b)(1) requires that mass-based effluent limitations for POTWs be based on design flow. The previous permit established mass based effluent limitations on a flow of 12.7 MGD. Annual average effluent flows for the 2 years prior to the development of this permit was 11.8 MGD and 12.2 MGD. Based on recent annual average flows reported by the Permittee, 12.7 MGD appears to remain representative of current operations. This permit

[1] U.S. Environmental Protection Agency. 2002a. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (5th Edition). EPA 821-R-02-012. Washington, DC: Office of Water.

continues to include mass-based effluent limitations using a flow of 12.7 MGD.

Mass-based effluent limitations in the previous permit were established in kg/day. However, to be consistent with other permits in the State, the draft permit establishes mass-based effluent limitations in lbs/day. Limitations expressed as kg/day are duplicative and therefore have not been established. The limitations established in this permit meet applicable anti-backsliding and antidegradation requirements, as discussed in Part D.2.m and D.2.n of this Fact Sheet.

The following table lists final effluent limitations contained in the draft permit and compares them to effluent limitations contained in the previous permit.

Table F-6. Summary of Final Effluent Limitations – BOD and TSS

Parameter	Units	Effluent Limitations Contained in the Previous Permit			Proposed Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	30	45	--	30	45	--
	lbs/day[1]	1,442[2]	2,163[2]	--	3,178	4,766	--
	% Removal	As a monthly average, not less than 85 percent removal efficiency from the influent stream.			The average monthly percent removal shall not be less than 85 percent.		
Total Suspended Solids (TSS)	mg/L	30	45	--	30	45	--
	lbs/day[1]	1,442[2]	2,163[2]	--	3,178	4,766	--
	% Removal	As a monthly average, not less than 85 percent removal efficiency from the influent stream.			The average monthly percent removal shall not be less than 85 percent.		

[1] Based on a design flow of 12.7 MGD.
[2] Effluent limitation applied as kg/day.

Table F-7. Summary of Final Effluent Limitations – All Other Pollutants

Parameter	Units	Effluent Limitations Contained in the Previous Permit			Proposed Effluent Limitations		
		Average Annual	Average Monthly	Maximum Daily	Average Annual	Average Monthly	Maximum Daily
Enterococci	CFU/100 ml	--	--	N/L	--	6,510[1]	93,186[2]
pH	s.u.	Not less than 6.0 and not greater than 9.0			Not less than ~~7~~6.0 and not greater than ~~8.6~~9.0		
Chronic Toxicity – *Ceriodaphnia Dubia*	TUc	--	--	186	--	--	--
Chronic Toxicity – *Tripneustes Gratilla*	TUc	--	--	[3]	--	--	Pass[4]
Chlordane	µg/L	--	--	--	0.030	--	0.74
	lbs/day	--	--	--	0.0032	--	0.078
Dieldrin	µg/L	--	--	--	0.0047	--	0.35
	lbs/day	--	--	--	0.00050	--	0.037
Ammonia Nitrogen	~~mg~~µg/L	--	--	--	[5]	--	[5]
	lbs/day	--	--	--	[5]		[5]

Parameter	Units	Effluent Limitations Contained in the Previous Permit			Proposed Effluent Limitations		
		Average Annual	Average Monthly	Maximum Daily	Average Annual	Average Monthly	Maximum Daily
~~Nitrate plus Nitrite~~	~~µg/L mg/L~~	~~----~~	~~----~~	~~----~~	~~--~~ [4]	~~----~~	15,000[6]
~~Total Phosphorus~~	~~lbs/day lbs/day~~	~~--~~	~~--~~	~~--~~ [5]	~~--~~	~~--~~	1,589[6]

[1] Effluent limitation expressed as a monthly geometric mean.
[2] Effluent limitation expressed as a single sample maximum.
[3] The chronic toxicity discharge limitation of 186 TUc listed in Part A.1 of the previous permit does not apply to monitoring results for toxicity tests using *Trypneustes gratilla*.
[4] "Pass", as described in section D.2.h of this Fact Sheet.
[5] **Final Effluent Limitations (effective <DATE – 9.75 years after effective date>):** Discharge from the facility shall not exceed an annual geometric mean of 2.00 µg/L (0.21 lbs/day) nor a single sample maximum of 5.00 µg/L (0.53 lbs/day).
Interim Effluent Limitations (effective through <DATE – 9.75 years after effective date>): Discharge from the facility shall not exceed an annual geometric mean of 4,400 µg/L (466 lbs/day) nor a single sample maximum of 10,800 µg/L (1,144 lbs/day).
~~Discharge from the facility shall not exceed an annual geometric mean of 2.0 µg/L.~~ [6] Applied as a single sample maximum.
~~[6] Discharge from the facility shall not exceed an annual geometric mean of 651 µg/L.~~
~~[7] Discharge from the facility shall not exceed an annual geometric mean of 2,976 µg/L.~~

Formatted: Superscript
Formatted: Tab stops: Not at 3.25" + 6.5"
Formatted: Not Superscript/ Subscript
Formatted: Superscript
Formatted: Tab stops: Not at 3.25" + 6.5"

m. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA Sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

Federal anti-backsliding regulations at 40 CFR 122.44(l)(i) allows for effluent limitations in a reissued permit to be less stringent if information is available which was not available at the time of the permit issuance and which have justified the application of a less stringent effluent limitation. The draft permit retains all effluent limitations from the previous permit. Therefore, effluent limitations and requirements for all pollutants are at least as stringent as those in the previous permit and are consistent with State and federal anti-backsliding regulations.

n. Satisfaction of Antidegradation Policy Requirements

The DOH established the State antidegradation policy in HAR, Section 11-54-1.1, which incorporates the federal antidegradation policy at 40 CFR 131.12. HAR, Section 11-54-1.1 requires that the existing quality of waters be maintained unless degradation is justified based on specific findings demonstrating that allowing lower water quality is necessary to accommodate economic or social development in the area in which the waters are located. All effluent limitations and requirements of the draft permit are retained from the previous permit. Therefore, the permitted discharge is consistent with antidegradation provisions of 40 CFR 131.12 and HAR, Section 11-54-1.1.

The impact on existing water quality will be insignificant and the level of water quality necessary to protect the existing uses will be maintained and protected.

E. Rationale for Receiving Water and Zone of Mixing Requirements

1. Summary of ZOM Water Quality Standards and Monitoring Data

The following are effluent quality monitoring results for HAR, Chapter 11-54, specific water quality criteria parameters that were provided in the ZOM Application on December 17, 2008, and applicable ZOM water quality criteria from 11-54-6(b)(3).

Table F-8. ZOM Monitoring Data

Parameter	Units	Applicable Water Quality Standard	Maximum Reported Concentration[1]
Total Nitrogen	µg/L	110[2]	18,800
Ammonia Nitrogen	µg/L	2.0[2]	10,800
Nitrate + Nitrite	µg/L	3.5[2]	14,200
Orthophosphate Phosphorus	µg/L	--	2,660
Total Phosphorus	µg/L	16[2]	3,460
Chlorophyll a	µg/L	0.15[2]	1.58
Turbidity	NTU	0.20[2]	16.00
TSS	mg/L	--	32
pH	s.u.	[3]	7.0
Dissolved Oxygen	mg/L	[4]	5.6
Temperature	°C	[5]	26.7
Salinity	ppm	[6]	5,900

[1] Source: ZOM Application dated December 17, 2008
[2] Water quality standard expressed as a geometric mean.
[3] pH shall not deviate more than 0.5 units from a value of 8.1, except at coastal locations where and when freshwater from stream, storm drain, or groundwater discharge may depress the pH to a minimum level of 7.0.
[4] Dissolved oxygen shall not be less than 75 percent saturation.
[5] Temperature shall not vary more than 1° Celsius from ambient conditions.
[6] Salinity shall not vary more than 10 percent from natural or seasonal changes considering hydrologic input and oceanographic factors.

2. Existing Receiving Water Limitations and Monitoring Data

a. Shoreline Stations

The following are a summary of the geometric mean values calculated from each shoreline monitoring location, reported in the monthly DMRs from January 2008 through October 2012.

Table F-9. Shoreline Monitoring Stations

Station	Geometric Mean[1]

	Enterococcus[2]
	CFU/100 mL
MS1	2.1
MS2	23.3
MS4	9.1
Kailua Beach	7.2
Kalama Beach	3.7
North Beach	2.8
Oneawa Beach	5.3
Applicable Water Quality Standard	[3]

[1] Source: Monthly DMR's submitted by the Permittee from January 2008 through October 2012.
[2] Reported geometric mean is the maximum annual geometric mean reported at each monitoring station.
[3] The water quality standard during the drafting of the previous permit within 300 meters of shore was a geometric mean of 7 CFU/100 mL. The water quality standard established in HAR 11-54 during the drafting of the draft permit is a geometric mean of 34 CFU/100 mL.

b. Nearshore Stations

The following are a summary of the geometric mean values calculated from each nearshore monitoring location, reported in the monthly and quarterly DMRs from January 2008 through October 2012.

Table F-10. Nearshore Monitoring Stations

Station	Geometric Mean[1]
	Enterococcus[2]
	CFU/100 mL
MN1	0.65
MN2	0.81
MN3	0.73
MN4	0.63
Applicable Water Quality Standard	[3]

[1] Source: Monthly and Quarterly DMR's submitted by the Permittee from January 2008 through October 2012.
[2] Reported geometric mean is the maximum annual geometric mean from the top, middle, and bottom sampling points at each station.
[3] The water quality standard during the drafting of the previous permit within 300 meters of shore was a geometric mean of 7 CFU/100 mL. The water quality standard established in HAR 11-54 during

Station	Geometric Mean[1] Enterococcus[2] CFU/100 mL

the drafting of the draft permit is a geometric mean of 34 CFU/100 mL.

c. Offshore Stations

The following are a summary of the geometric mean values calculated from each offshore monitoring location, reported in the monthly and quarterly DMRs from January 2008 through October 2012.

Table F-11. Offshore Monitoring Stations

Station	Geometric Mean[1] Enterococcus[2] CFU/100 mL	Nitrate + Nitrite Nitrogen[2] µg/L	Ammonia Nitrogen[2] µg/L	Total Nitrogen[2] µg/L	Total Phosphorus[2] µg/L	Turbidity[2] NTU	Chlorophyll a[2] µg/L
M1 (Control Station)	0.78	1.191.4	1.772.1	93.02104	7.277.7	0.240.28	0.180.27
M2	2.4	3.727.4	3.385.8	93.02100	8.739.9	0.110.31	0.180.19
M3	2.2	1.193.0	2.153.0	93.52102	8.158.4	0.210.25	0.160.17
M4	5.9	1.482.6	2.454.2	91.8096	6.9348.4	0.20060.25	0.160.24
M5	2.4	1.862.8	3.404.4	89.7396	7.268.0	0.2090.25	0.170.21
M6 (Control Station)	1.6	1.101.5	2.564.1	89.9296	6.837.9	0.190.33	0.150.20
Applicable Water Quality Standard	[3]	3.53.5	2.02.0	110110	1616	0.200.20	0.150.15

Formatted Table

[1] Source: Monthly and Quarterly DMR's submitted by the Permittee from January 2008 through October 2012.

[2] Reported geometric mean is the maximum annual geometric mean from the top, middle, and bottom sampling points at each station.

[3] The water quality standard during the drafting of the previous permit for waters within 300 meters was a geometric mean of 7 CFU/100 mL. The water quality standard established in HAR 11-54 during the drafting of the draft permit is a geometric mean of 34 CFU/100 mL.

3. Proposed Receiving Water Limitations

a. Basic Water Quality Criteria Applicable to the Facility

(1) The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the DOH, as required by the Water Quality Act of 1987 (P.L. 100-4) and regulations adopted thereunder. The DOH adopted water quality standards specific for open coastal waters in HAR, Chapter 11-54. The draft permit incorporates

receiving water limitations and requirements to ensure the facility does not exceed applicable water quality standards.

(2) The Pacific Ocean off of Mokapu Peninsula is designated as "Class A Dry Open Coastal Waters". As such, the discharge from the facility shall not interfere with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife and allows recreational activities in and on the water. The draft permit incorporates receiving water limitations for the protection of the beneficial uses of Pacific Ocean.

The Permittee is required to comply with the HAR, Chapter 11-54, Basic Water Quality Criteria of which has been incorporated as part of the draft permit under Section 1 of the DOH Standard NPDES Permit Conditions, dated December 30, 2005.

(3) The following criteria are included in HAR, Section 11-54-8(b) for recreational areas in marine recreational waters:

(a) Within 300 meters (1,000 feet) of the shoreline, including natural public bathing or wading areas, enterococcus content shall not exceed a geometric mean of 35 CFU per 100 milliliters in not less than five samples which shall be spaced to cover a period between 25 and 30 days. No single sample shall exceed the single sample maximum of 104 CFU per 100 milliliters.

Based on the State Enterococcus standard at the time of reissuance, the previous permit included a geometric mean of 7 CFU per 100 milliliters but did not establish a single sample maximum. However, as explained by the DOH in *Rationale for Proposed Revisions to Hawaii Administrative Rules Title 11 Department of Health Chapter 54 Water Quality Standards*, the State enterococcus standard of 7 CFU per 100 milliliters was based mainly on a health risk assessment, not as a regulatory limit. In the rationale, the DOH recommended that the State enterococcus water quality standard be revised to a geometric mean of 35 CFO per 100 milliliters and a single sample maximum value of 104 CFO per 100 ml to be consistent with federal standards. The new standards were adopted by the DOH on June 15, 2009, and approved by the EPA on March 19, 2010. The draft permit establishes the new enterococcus standards from HAR, Section 11-54-8(b) for recreational waters within 300 meters (1,000 feet) of shoreline. Since the new water quality standards were adopted by the DOH and EPA for all marine recreational waters, DOH has determined that the impact the new water quality standards established in the draft permit will be

insignificant and the level of water quality necessary to protect the existing uses will be maintained and protected.

(b) At locations where sampling is less frequent than five samples per 25 to 30 days, no single sample shall exceed the single sample maximum nor shall the geometric mean of these samples taken during the 30-day period exceed 35 CFU per 100 milliliters.

(c) Raw or inadequately treated sewage, sewage for which the degree of treatment is unknown, or other pollutants of public health significance, as determined by the director of health, shall not be present in natural public swimming, bathing, or wading areas. Warning signs shall be posted at locations where human sewage has been identified as temporarily contributing to the enterococcus count.

The draft permit establishes these criteria for recreational areas, as described in Part C of the draft permit, to be consistent with HAR, Section 11-54-8(b).

b. Specific Criteria for "Class A Dry Open Coastal Waters"

Table F-12. Specific Criteria for "Class A Dry Open Coastal Waters"

Parameter	Units	Geometric mean not to exceed the given value	Not to exceed the given value more than 10% of the time	Not to exceed the given value more than 2% of the time
Total Nitrogen	µg/L	110.00	180.00	250.00
Ammonia Nitrogen	µg/L	2.00	5.00	9.00
Nitrate + Nitrite Nitrogen	µg/L	3.50	10.00	20.00
Total Phosphorus	µg/L	16.00	30.00	45.00
Light Extinction Coefficient	k units	0.10	0.30	0.55
Chlorophyll a	µg/L	0.15	0.50	1.00
Turbidity	NTU	0.20	0.50	1.00
pH	standard units	Shall not deviate more than 0.5 standard units from a value of 8.1, except at coastal locations where and when freshwater from stream, stormdrain, or groundwater discharge may depress the pH to a minimum level of 7.0.		
Dissolved Oxygen	~~mg/L~~% saturation	Shall not be less than 75 percent saturation, determined as a function of ambient water temperature and salinity.		
Temperature	°C	Shall not vary more than 1°C from ambient conditions.		
Salinity	ppt~~m~~	Shall not vary more than 10 percent from natural or seasonal changes considering hydrologic input and oceanographic factors.		

The specific water quality criteria listed at HAR, Section 11-54-6(b)(3) for "Class A Dry Open Coastal Waters" shall apply to the treated wastewater

through Outfall Serial No. 001, as seen in the table above, at the edge of the mixing zone. The discharges from Outfall Serial No. 001 shall comply with the values listed in the table above, except that the specific water quality criteria for the parameters may be exceeded within the boundaries of the ZOM.

These requirements are consistent with HAR, Chapter 11-54 and retained from the previous permit.

c. Zone of Mixing (ZOM)

HAR, Chapter 11-54 allows for a ZOM, which is a limited area around outfalls to allow for initial dilution of waste discharges, if the ZOM is in compliance with requirements in HAR, Section 11-54-9(c). The Permittee has requested that the existing ZOM for the assimilation of treated wastewater be retained. Consistent with the current permit, the ZOM requested is 1,000 feet wide and 1,960 feet along the centerline of the diffuser, and extends vertically downward to the ocean floor.

(1) Prior to the renewal of a ZOM, the environmental impacts, protected uses of the receiving water, existing natural conditions, character of the effluent, and adequacy of the design of the outfall must be considered. The following findings were considered:

(a) The Permittee's ZOM application indicates that the existing physical environment is a marine bottom, class II reef flats. The ZOM application indicates that no major physical effects are expected due to the continuation of the ZOM.

(b) The diffuser for Outfall Serial No. 001 reportedly provides a minimum of 185:1 dilution and discharges approximately 3,323 feet offshore. No information provided in the ZOM application indicates that dilution would be negatively impacted by current conditions. Further, the permit requires the Permittee to conduct a ZOM Dilution Analysis Study to evaluate the available dilution at the edge of the ZOM within 3 years of the effective date of the permit and verify the presence or absence of assimilative capacity for nutrients with reasonable potential.

(c) The Permittee's ZOM application indicates that, based on monitoring data on the existing chemical environment, there seems to be no difference in water quality between the ZOM stations and control stations. Therefore, there appears to be no major environmental effects on the receiving water from the discharge.

(d) Effluent data and receiving water data are provided in Tables F-5, F-8, F-9, F-10, and F-11 of this Fact Sheet. The effluent and receiving

water data indicate there is a potential for nutrient (ammonia nitrogen) impairment as discussed in Part D.2.e of this Fact Sheet. However, biological monitoring of the Facility's diffuser found that no evidence of negative impacts to fish populations due to the diffuser were identified.

Formatted: Not Highlight

Comment [TW11]: There is a study referenced in the ZOM application called "Benthic Sampling in the Vicinity of the Mokapu Ocean Outfall, Oahu, Hawaii, March 2008" that we don't have and might be useful in this section.

(2) HAR 11-54-9(c)(5) prohibits the establishment of a ZOM unless the application and supporting information clearly show: that the continuation of the ZOM is in the public interest; the discharge does not substantially endanger human health or safety; compliance with the WQS would produce serious hardships without equal or greater benefits to the public; and the discharge does not violate the basic standards applicable to all waters, will not unreasonably interfere with actual or probably use of water areas for which it is classified, and has received the best degree of treatment or control. The following findings were made in consideration of HAR 11-54-9(c)(5):

(a) The Facility treats domestic wastewater for approximately 94,000 people in the Ahuimanu, Kaneohe, and Kailua communities and is a necessity for public health. There are no other treatment facilities currently servicing this area and a cessation of function or operation would cause severe hardship to the residents.

(b) The level of treatment of the discharge and the depth and distance of the outfall offshore does not substantially endanger human health or safety. A review of the shoreline, nearshore, and offshore enterococcus bacteria data does not indicate a shoreward movement of the ocean outfall discharge.

(c) The feasibility and costs to install treatment necessary to meet applicable WQS end-of-pipe, or additional supporting information, were not provided by the Permittee to demonstrate potential hardships. As discussed in Part E.3.c.(2)(a), the operation of the Facility has been found to benefit the public. No information is known that would revise the finding during the previous permit term that compliance with the applicable WQS without a ZOM would produce serious hardships without equal or greater benefits to the public.

(d) As discussed in Part D.2.c.(5)(c) of this Fact Sheet, effluent data indicates the presence of pollutants in excess of applicable WQS. However, this permit establishes water quality-based effluent limitations based on WQS. The Permit requires compliance with the effluent limitations and conditions which are protective of the actual and probable uses of the receiving water and implement applicable technology-based effluent limitations.

The Department has determined that the ZOM satisfies the requirements in HAR, Section 11-54-09(c)(5).

The establishment of the ZOM is subject to the conditions specified in Part D of the draft permit. The draft permit incorporates receiving water monitoring requirements which the DOH has determined are necessary to evaluate compliance of the Outfall Serial No. 001 discharges with the applicable water quality criteria, as described further in section F.4 of this Fact Sheet.

F. Rationale for Monitoring and Reporting Requirements

40 CFR 122.41(j) specify monitoring requirements applicable to all NPDES permits. HAR, Section 11-55-28 establishes monitoring requirements applicable to NPDES permits within the State of Hawaii. 40 CFR 122.48 and HAR, Section 11-55-28 require that all NPDES permits specify requirements for recording and reporting monitoring results. The principal purposes of a monitoring program are to:

- Document compliance with waste discharge requirements and prohibitions established by the DOH;
- Facilitate self-policing by the Permittee in the prevention and abatement of pollution arising from waste discharge;
- Develop or assist in the development of limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards; and,
- Prepare water and wastewater quality inventories.

The draft permit establishes monitoring and reporting requirements to implement federal and State requirements. The following provides the rationale for the monitoring and reporting requirements contained in the draft permit.

1. Influent Monitoring

Influent monitoring is required to determine the effectiveness of pretreatment and non-industrial source control programs, to assess the performance of treatment facilities, and to evaluate compliance with effluent limitations. Influent monitoring requirements for flow, BOD_5, and TSS have been retained from the previous permit. Additionally, influent monitoring for ammonia, chlordane, dieldrin, nitrate plus nitrite, and total phosphorus has been established in the draft permit in order to determine if ammonia, chlordane, dieldrin, nitrate plus nitrite, and total phosphorus is present in the influent in elevated concentrations. The proposed influent water monitoring requirements are specified in Part A.1 of the draft permit.

2. Effluent Monitoring – Outfall Serial No. 001

The following monitoring requirements are applicable at Outfall Serial No. 001.

a. Monitoring requirements for ammonia, nitrate plus nitrite, total nitrogen, total phosphorus, and turbidity are retained from the previous permit to determine compliance with effluent limitations, where applicable, and to enable comparison with the receiving water ZOM monitoring results determine if the facility effluent is contributing to elevated concentrations of said pollutants.

b. Monitoring requirements for ~~chlorophyll a, and~~ temperature have been added to the draft permit to enable comparison with the receiving water ZOM monitoring results to determine if the facility effluent is contributing to elevated concentrations of said pollutants. Monitoring requirements are consistent with monitoring requirements for other nutrients.

c. Monitoring requirements for flow have been retained from the previous permit to calculate pollutant loading and to determine compliance with mass-based effluent limitations.

d. Monitoring requirements for pH, BOD_5, enterococcus, and TSS have been retained from the previous permit in order to determine compliance with effluent limitations and to collect data for future RPAs.

e. Monitoring requirements for all other pollutants listed in Appendix 1 are retained from the previous permit in order to collect data for future RPAs.

3. Whole Effluent Toxicity Monitoring

Consistent with the previous permit, monthly whole effluent toxicity testing is required in order to determine compliance with whole-effluent toxicity effluent limitations as specified in Parts A.1 and B of the draft permit.

4. Receiving Water Quality Monitoring Requirements

a. Shoreline Water Quality Monitoring

Shoreline water quality monitoring for enterococci is used to determine compliance with water quality criteria specific for marine recreational waters within 300 meters (1,000 feet) of shoreline, as described in Part C of the draft permit. The Permittee shall monitor at seven shoreline stations with a frequency of 5 days per month in order to calculate a geometric mean. These monitoring requirements are retained from the previous permit and included in Part E.1 of the draft permit.

b. Nearshore Water Quality Monitoring

Nearshore water quality monitoring, within 300 meters of shore, is required to determine compliance with water quality criteria specific for marine recreational waters within 300 meters (1,000 feet) of shoreline, as described in Part C of the draft permit. All monitoring requirements for the nearshore stations are retained from the previous permit and included in Part E.2 of the draft permit.

c. Zone of Initial Dilution Water Quality Monitoring

Water quality monitoring at the boundary of the Zone of Initial Dilution (ZID) ~~is~~ has been removed due to the application of end-of-pipe effluent limitations for enterococcus. Near shore monitoring shall be used~~required~~ to determine compliance with water quality criteria specific for marine recreational waters within 300 meters (1,000 feet) of shoreline, as described in Part C of the draft permit. ~~All monitoring requirements for the ZID stations are retained from the previous permit and included in Part E.3 of the draft permit.~~

Comment [DC12]: Major change based on Discharger comments. They don't want ZID monitoring. Because they are already required to do near shore monitoring, and have end-of-pipe limits for entero, this makes sense, please let me know what you think.

d. Offshore Water Quality Monitoring

Offshore water quality monitoring is required to determine compliance with State water quality standards, as described in Part D of the draft permit. The draft permit requires the Permittee to monitor offshore waters at four stations along the boundary of the ZOM and two control stations outside the ZOM. All monitoring requirements for offshore stations are retained from the previous permit and included in Part E.4 of the draft permit.

e. Ocean Outfall Monitoring

At least once during the term of this permit, the Permittee shall inspect the ocean outfall and submit the investigation findings to the Director. The outfall inspection shall include, but not be limited to, an investigation of the structural integrity, operational status, and maintenance needs. The Permittee shall include findings of the inspection to the Director in the annual wastewater pollution prevention report in Part F of the draft permit for the year the outfall inspection is conducted. This requirement is retained from the previous permit.

f. ZOM Dilution Analysis Study

Permit requirements have been based on a limited assessment of assimilative capacity within the receiving water. The Permittee is required to confirm that assimilative capacity is available in the receiving water for nitrate + nitrite and evaluate assimilative capacity for ammonia nitrogen.

Formatted: Indent: First line: 0"

Formatted: Font: Not Bold

g. Specific Water Quality Parameters Effluent Requirements

The previous permit included operation performance thresholds for ammonia, total nitrogen, nitrate plus nitrite, and total phosphorus and includes a requirement for an initial investigation evaluation plan if the threshold values are exceeded in the effluent. Effluent data from the term of the previous permit indicates ammonia and, nitrate plus nitrite, and phosphorus have reasonable potential to cause or contribute to an exceedance above water quality standards for said pollutants. Thus, effluent limitations for ammonia and, nitrate plus nitrite, and phosphorus are established in this permit. Effluent data from during the term of the previous permit indicates that total nitrogen and phosphorus does not have reasonable potential to cause or contribute to an exceedance above water quality criteria; thus, they areit is not expected to be present at levels that will degrade ambient water quality. Therefore, the draft permit does not retain operational performance thresholds for ammonia, nitrate plus nitrite, total nitrogen, and total phosphorus. However, monitoring requirements for total nitrogen and total phosphorus have been retained.

G. Rationale for Provisions

1. Standard Provisions

The Permittee is required to comply with DOH Standard NPDES Permit Conditions, dated December 30, 2005, which are included as part of the draft permit.

2. Monitoring and Reporting Requirements

The Permittee shall comply with all monitoring and reporting requirements included in the draft permit and in the DOH Standard NPDES Permit Conditions.

3. Special Provisions

a. Reopener Provisions

The draft permit may be modified in accordance with the requirements set forth at 40 CFR 122 and 124, to include appropriate conditions or limitations based on newly available information, or to implement any new state water quality criteria that are approved by the EPA.

b. Special Studies and Additional Monitoring Requirements

(1) Toxicity Reduction Requirement. The draft permit requires the Permittee to submit an initial investigation Toxicity Reduction Evaluation (TRE) workplan to the Director and EPA which shall describe steps which the Permittee intends to follow in the event that toxicity is detected. This requirement is retained from the previous permit and is discussed in detail in Part B.2 of the draft permit.

4. Special Provisions for Municipal Facilities

a. Pretreatment Requirements

The federal CWA Section 307(b), and federal regulations, 40 CFR 403, require POTWs to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to CWA Sections 307(b), (c), (d), and 402(b), 40 CFR 125, 40 CFR 403, and in HAR, Section 11-55-24.

The draft permit includes a pretreatment program in accordance with federal regulations and State pretreatment regulations. The pretreatment requirements are based on the previous permit and are consistent with NPDES permits issued to other Hawaii POTWs. The draft permit also requires the Permittee to implement and update a BMP-based program for controlling animal and vegetable oil and grease.

b. Biosolids Requirements

The use and disposal of biosolids is regulated under federal laws and regulations, including permitting requirements and technical standards included in 40 CFR 503, 257, and 258. The biosolids requirements in the draft permit are in accordance with 40 CFR 257, 258, and 503, are based on the previous permit and are consistent with NPDES permits issued to other Hawaii POTWs.

5. Other Special Provisions

a. Wastewater Pollution Prevention Program. The draft permit requires the Permittee to submit a wastewater pollution control plan by May 31 each year. This provision is retained from the previous permit and is required to allow DOH to ensure that the Permittee is operating correctly and attaining maximum treatment of pollutants discharged by considering all aspects of the wastewater treatment system. This provision in included in Part F of the draft permit.

b. Wastewater treatment facilities subject to the draft permit shall be supervised and operated by persons possessing certificates of appropriate grade, as determined by the DOH. If such personnel are not available to staff the wastewater treatment facilities, a program to promote such certification shall be developed and enacted by the Permittee. This provision is included in the draft permit to assure that the facility is being operated correctly by personnel

trained in proper operation and maintenance. This provision is retained from the previous permit and included in Part J.1 of the draft permit.

c. The Permittee shall maintain in good working order a sufficient alternate power source for operating the wastewater treatment and disposal facilities. This provision is retained from the previous permit in order to ensure that if a power failure occurs, the facility is well equipped to maintain treatment operations until power resumes. If an alternate power source is not in existence, the draft permit requires the Permittee to halt, reduce, or otherwise control all discharges upon the reduction, loss, or failure of the primary source of power. This provision is included in Part J.2 of the draft permit.

H. Public Participation

Persons wishing to comment upon or object to the proposed draft NPDES permit in accordance with HAR, Sections 11-55-09(b) and 11-55-09(d), may submit their comments in writing either in person or by mail, to:

Clean Water Branch
Environmental Management Division
919 Ala Moana Boulevard, Room 301
Honolulu, HI 96814-4920